
Appendix E

Radionuclides Detected by Gamma Spectroscopy (Gamma Scan)

One of the several forms of radiation is gamma radiation. Gamma radiation is emitted by many radionuclides. Gamma spectroscopy, sometimes called a gamma scan, is used in the environmental surveillance program to detect the presence of the radionuclides shown in Table E.1. These radionuclides may be natural or result from Hanford activities. They include activation products

formed by the absorption of a neutron by a stable element and fission products that occur following fission (splitting) of nuclear fuel radionuclides like plutonium-239 or uranium-235. These radionuclides may not be discussed in the main body of this report if they are below detection levels.

Table E.1. Radionuclides Analyzed by Gamma-Spectroscopy

Radionuclide	Symbol	Source
Beryllium-7	⁷ Be	Natural
Sodium-22	²² Na	Activation product
Sodium-24	²⁴ Na	Activation product
Potassium-40	⁴⁰ K	Natural
Manganese-54	⁵⁴ Mn	Activation product
Cobalt-58	⁵⁸ Co	Activation product
Cobalt-60	⁶⁰ Co	Activation product
Iron-59	⁵⁹ Fe	Activation product
Zinc-65	⁶⁵ Zn	Activation product
Zirconium/Niobium-95	⁹⁵ Zr/Nb	Activation product and fission product
Molybdenum-99	⁹⁹ Mo	Activation product and fission product
Ruthenium-103	¹⁰³ Ru	Activation product and fission product
Ruthenium-106	¹⁰⁶ Ru	Fission product
Antimony-125	¹²⁵ Sb	Activation product
Iodine-131	¹³¹ I	Fission product
Cesium-134	¹³⁴ Cs	Activation product
Cesium-137	¹³⁷ Cs	Fission product
Barium/Lanthanum-140	¹⁴⁰ Ba/La	Fission product
Cerium-141	¹⁴¹ Ce	Activation product and fission product
Cerium/Praseodymium-144	¹⁴⁴ Ce/Pr	Fission product
Europium-152	¹⁵² Eu	Activation product
Europium-154	¹⁵⁴ Eu	Activation product
Europium-155	¹⁵⁵ Eu	Activation product